In sum, the '885 patent teaches against the use of such technically attainable, but non-essential and costly, expedients of non-air atmospheres or vacuums.

Since there is no positive incentive to use a non-air atmosphere or a vacuum in claims 1-10 of the '885 patent (indeed, there is a disincentive) it is crystal clear that there is no teaching or suggestion of combining a non-air environment or a vacuum, as appears to be disclosed in Heath, with the claims of the '885 patent.

Summary

In view of the remoteness of the secondary references and the explicit and/or implicit teachings in the claims of the '885 patent against the use of the expedients found in the secondary references, it is, we submit, beyond reasonable argument that there is any disclosure or suggestion in the claims of the '885 patent to modify and supplement said claims as proposed in the Office Action, and hence withdrawal of the rejections is requested.

Respectfully submitted,

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15. In a method of heat treating rod, bar and block tool steel workpieces the steps of

providing a heat treatment furnace of a size suitable to receive a tool steel workpiece to be heat treated,

providing a heat source in the interior of the furnace consisting of a source of infrared heat energy,

subjecting the tool steel workpiece to heat treatment by exposing said tool steel workpiece to infrared heat energy from the infrared heat energy source and

maintaining said tool steel workpiece stationary during subjection of the workpiece to heat treatment from the infrared energy source.

6. The method of claim 15 further including the step of

providing a ceramic or other high melting point support structure to support the tool steel workpiece.

7. The method of claim 15 further including the step of

providing an air atmosphere in the furnace.

16. In a method of heat treating a rod or bar or block tool steel workpiece the steps of

providing a heat treatment furnace of a size suitable to receive tool steel workpiece to be heat treated,

providing a source of infrared heat energy in the interior of the furnace consisting of tungsten halogen lamp means,

subjecting the tool steel workpiece to heat treatment by exposing said tool steel workpiece to infrared heat energy from the tungsten halogen lamp means and

maintaining said tool steel workpiece stationary during subjection of the workpiece to heat treatment from the infrared energy source.

17. The method of claim 16 further including the step of

generating a temperature of up to 5000°F in a tool steel workpiece located in close proximity thereto from the tungsten halogen lamp means.

4. The method of claim 15 further characterized by and including the step of

providing a coating of reflective material over at least some of the interior surface of the furnace.

19. In a method of heat treating a tool steel workpiece the steps of

providing a heat source in the interior of a furnace of a size suitable to receive a tool steel workpiece to be heat treated,

providing a coating of reflective material selected from the group consisting of gold, silver and aluminum over at least some of the interior surface of the furnace, and

subjecting the tool steel workpiece to heat treatment by exposing said tool steel workpiece to infrared heat energy from an infrared heat energy source.

8. The method of claim 15 further including the step of providing a non-air environment in the furnace.

9. The method of claim 15 further including the step of providing a vacuum environment in the furnace.

Re: 183-U.S.

Claim 1 - U.S. Patent 6,398,885

1. In a method of conditioning a shank portion of a pre-hardened die block, said pre-hardened die block having a working side and a mounting side, comprising the steps of:

providing a pre-hardened die block having (a) a working surface whose peripheral edges lie in a single flat plane, (b) a shank portion whose exterior surface lies in a single flat plane, (c) the planes of said working surface and said shank portion lying parallel to one another, (d) said parallel planes being located on opposite sides of said pre-hardened die block, and (e) said opposite sides being the working side and the mounting side of said die block.

said pre-hardened die block having a final hardness level including its working surface.

the portion of said fully hardened die block located on the mounting side of the fully hardened die block opposite said working surface having a depth of about two inches extending in a direction from an exterior surface toward said working surface.

treating said two inches deep opposite portion by subjecting it to an electrical source of heat having a temperature higher than the original tempering temperature of the fully hardened die block.

subjecting the remaining portions of the fully hardened die block which are not exposed to the electrical source of heat to ambient conditions, including ambient atmosphere, while said treated portion is subjected to said electrical source of heat.

maintaining the subjection of said opposite treated portion to said electrical source of heat until the original tempering temperature of the hardened die block is exceeded in the said opposite portion and thereby the hardness of said treated portion is decreased to a value below the hardness of the remainder of the die block.

terminating the subjection of said opposite portion to said electrical source of heat after said opposite portion is softened, as contrasted to the fully hardened working surface, to a depth of about two inches below said exterior surface.

whereby the treated portion acquires an easily machineable condition of at least about two inches in depth opposite the working surface, whose initial hardened condition is unchanged, for the formation of a shank.

2. The method of claim 1 further characterized in that the electrical source of heat is in abutting contact with the shank portion of the die block.

3. The method of claim 2 further characterized in that the electrical source of heat is induction heating coil means.

4. The method of claim 1 further characterized in that the electrical source of heat is spaced from the shank portion of the die block.

5. The method of claim 4 further characterized in that the electrical source of heat is infrared heating means.

6. The method of claim 5 further characterized in that the infrared heating means are tungsten halogen lamps arranged to direct infrared energy onto the shank portion of the die block.

7. The method of claim 6 further characterized in that the tungsten halogen lamps operate in the short wave division of the infrared electromagnetic spectrum.

8. The method of claim 7 further characterized in that the wavelength of the tungsten halogen lamps is approximately 1.2 μm.

9. The method of claim 8 further characterized in that the tungsten halogen lamps operate in a cold wall furnace.

10. The method of claim 9 further characterized in that the surface temperature of the shank portion reaches about 1320° F. during treatment.